MS APPEAL BRIEF - PATENTS
PATENT
4450-0148P

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of		Before the Board of Appeals	
Edward KLEIN		Group:	2697
Appl. No.:	09/501,202	Examiner:	T.E. VOLPER
Filed:	February 10, 2000		
Conf.:	3531		
For:	SYSTEM FOR NON-DISRUPTIVE INSERTION AND REMOVAL OF NODES IN AN ATM SONET RING		

APPEAL BRIEF TRANSMITTAL FORM

MS APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

August 17, 2004

Sir:

Transmitted herewith is an Appeal Brief (in triplicate) on behalf of the Appellants in connection with the above-identified application.

☐ The enclosed document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

A Notice of Appeal was filed on June 17, 2004.

☐ Applicant claims small entity status in accordance with 37 C.F.R. § 1.27

The fee has been calculated as shown below:

☐ Extension of time fee pursuant to 37 C.F.R. §§ 1.17 and 1.136(a) - $0.00.

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Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By [signature] #47,305
For Michael R. Cammarata, #39,491

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

MRC/JWR/kpc

(Rev. 02/08/2004)

PATENT
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IN THE U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Edward KLEIN et al.	Conf.:	3531
Appl. No.:	09/501,202	Group:	2665
Filed:	February 10, 2000	Examiner:	VOLPER, Thomas
For:	SYSTEM FOR NON-DISRUPTIVE INSERTION AND REMOVAL OF NODES IN AN ATM SONET RING		

BRIEF ON BEHALF OF APPELLANT FILED UNDER PROVISION OF 37 C.F.R. § 1.192

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

August 17, 2004

Dear Sir:

This is an Appeal from the Final Rejection of February 27, 2004 of claims 1-29. This Appeal Brief is submitted to support the Notice of Appeal filed on June 17, 2004.

(1) REAL PARTY IN INTEREST:

The real party in interest in the present Appeal is CIENA CORPORATION. The named inventors assigned their rights to the invention disclosed in the application and any patent that may issue therefrom to OMNIA COMMUNICATIONS, INC., as recorded in the Patent and Trademark Office at Reel 010610, Frame 0014. Filed concurrently herewith is an Agreement and

Plan of Merger disclosing the acquisition of OMNIA COMMUNICATIONS by CIENA CORPORATION, thus making CIENA CORPORATION the real party of interest.

(2) RELATED APPEALS AND INTERFERENCES:

Appellant submits that no other appeals or interferences are known to Appellant, Appellant's legal representative, or the Assignee of the present application, which would directly affect or be affected by, or have a bearing on the Board's decision in the pending Appeal.

(3) STATUS OF THE CLAIMS:

Appellant submits that claims 1-29 are pending in the application. Claims 1, 12, 14, and 24 are independent claims. Claims 1-29 stand rejected and are the claims on Appeal. A complete copy of pending claims 1-29 is provided in the Appendix of Claims attached hereto.

(4) STATUS OF ANY AMENDMENT FILED SUBSEQUENT TO FINAL REJECTION:

A Reply After Final was filed on May 11, 2004 including amendments to claims 12, 13, 20, and 21, which were not entered by the Examiner.

A second Reply After Final on July 22, 2004 including amendments to claims 6 and 20, which have been entered for purposes of this Appeal.

(5) SUMMARY OF THE INVENTION:

In existing ring networks, such as ATM rings, the use of virtual paths in the ring network may give rise to traffic disruptions when a node is inserted into the ring network. Specifically, the newly inserted node is not operative in existing ring networks until all the existing nodes are reprogrammed individually and manually to make use of the virtual paths associated with the new node. Traffic disruptions specifically caused by the reconfiguration of virtual paths in existing rings is a problem that is specifically addressed by the present invention.

Exemplary embodiments of the present invention provide a system and method for non-disruptively inserting a node into the operations of a ring network. The node 12_j being inserted into the ring network 10 is hereafter referred to as the "new node" 12_j. Fig. 2 illustrates a ring network 10 into which a new node 12_j may be inserted, according to this embodiment. Fig. 3 is a flowchart illustrating the steps for inserting the new node 12_j.

According to an exemplary embodiment, after the new node 12_j is physically connected into the ring, e.g., via cabling (dotted lines in Fig. 2), the new node 12_j is configured to operate as an optical bypass and physically pass traffic between its neighboring nodes 12_3 and 12_4 (step 300; Specification at page 5, line 23 – page 6, line 5). Thereafter, the new node's 12_j processor is configured to control traffic passing through on existing virtual paths, thereby

operating the new node 12_j as a pass through for the existing virtual paths (steps 302, 304; Spec. at page 6, lines 9-14).

The new node 12_j then requests the ring hub node 12_1 to assign one or more virtual paths to the new node 12_j for communicating to the other nodes 12 (step 306; Spec. at lines 15-19). In response, the ring hub node 12_1 assigns one or more virtual paths to the new node 12_j (step 308; Spec. at lines 23-28). The other nodes 12 of the ring network 10 are notified of the newly assigned virtual paths (e.g., by the ring hub node 12_1), and updated accordingly (step 310). Then, after the new node 12_j is updated with the virtual paths/circuits (step 312), it may participate fully in ring operations (step 314; Spec. at page 7, lines 1-12).

According to another exemplary embodiment, a failed node 12 may be removed from ring operations in a non-disruptive manner. Fig. 4 is a flowchart illustrating steps for removing such a node 12. The ring hub node 12_1 determines the failure in a particular node 12 (step 400). In response, the hub node 12_1 may instruct the other nodes 12 to initiate protection switching, if necessary (i.e., if the failed nodes cannot operate as an optical by-pass) (step 402; Spec. at page 7, lines 4-8).

The hub node 12_1 then instructs the non-failing nodes to tear down the virtual paths and circuits that originate from, or are directed to, the failed node 12 (step 404). The hub node 12_1 further instructs the non-failing nodes 12 to update their ring topology information and routing tables, to remove the failed node 12 (step 406). During these steps, the remaining nodes continue to send

and receive traffic over the existing virtual paths and circuits (Spec. at page 8, lines 13-16).

(6) ISSUES PRESENTED

A. Whether claims 1-3, 6-11, 14-16, 19, 20, and 22-29 are unpatentable under 35 U.S.C. § 103(a) over Higgins in view of Chan.

B. Whether claims 4 and 17 are unpatentable under 35 U.S.C. § 103(a) over Higgins in view of Chan, and further in view of Ballintine.

C. Whether claims 5 and 18 are unpatentable under 35 U.S.C. § 103(a) over Higgins in view of Chan, and further in view of Nakata.

D. Whether claim 12 is unpatentable under 35 U.S.C. § 103(a) over Chan.

E. Whether claims 13 and 21 are unpatentable under 35 U.S.C. § 103(a) over Chan, and further in view of Higgins.

Appellant respectfully submits that the answer to each of these issues is in the negative.

(7) GROUPING OF CLAIMS

For purposes of this Appeal, Appellant groups the claims as follows:

I. Independent claim 1 and its dependent claims 2-4, 6-11, and 20 stand or fall together.

II. Dependent claim 5 does not stand or fall with its base claim 1.

III. Independent claim 12 stands or falls by itself.

IV. Dependent claim 13 does not stand or fall with base claim 12.

V. Dependent claim 21 does not stand or fall with base claim 12.

VI. Independent claim 14 and its dependent claims 15-17, 19, 22, and 23 stand or fall together.

VII. Dependent claim 18 does not stand or fall with its base claim 14.

VIII. Independent claim 24 and its dependent claims 25, 26, and 29 stand or fall together.

IX. Dependent claim 27 does not stand or fall with base claim 24. Claim 28 stands or falls together with claim 27.

(8) ARGUMENTS

A. The Rejection of claims 1-4, 6-11, 14-17, 19, 20, 22-26, and 29 Under 35 U.S.C. § 103(a).

1. Summary of the Examiner's Rejection.

The Examiner rejected claims 1-3, 6-11, 14-16, 19, 20, 22-26, and 29 under 35 U.S.C. § 103(a) as being unpatentable over Higgins in view of Chan. The Examiner further rejected claims 4 and 17 under § 103(a) as being unpatentable over Higgins in view of Chan, and further in view of Ballintine.

With respect to claims 1-3, 6-11, 14-16, 19, 20, 22-26, and 29, the Examiner asserts that Higgins discloses a method of non-disruptively adding a new node to an inter-nodal network. The Examiner contends that Higgins discloses a master node, which can be interpreted as the claimed ring hub node

of the present invention. According to the Examiner, Higgins discloses that when a new node is added, the master node instructs the two neighbor nodes to operate in a loopback mode, thereby causing the portion of the network between the neighbor nodes to be physically disconnected. The Examiner asserts that Higgins' teaching of the two neighbor nodes operating in loopback mode provides a teaching of operating a node as a bypass for traffic on the ring. The Examiner refers to col. 3, lines 51-67 for the above assertions. *See* Paper No. 6 at page 4, 2nd paragraph.

The Examiner further asserts that, in Higgins, the new node receives instructions from a host while the inter-nodal network is configured to include the new node, referring to col. 4, lines 1-13. According to the Examiner, Higgins discloses that after insertion of the new node, the neighbor nodes are returned to an open mode and verification is made that the new node and neighbor nodes have open ports (the Examiner refers to col. 4, lines 35-43). The Examiner contends, that in Higgins, the new node can be configured to transmit and receive packets to and from the inter-nodal network after returning to open mode, referring to col. 4, lines 44-47. The Examiner asserts that Higgins teaches each of the nodes receiving packetized information through port A, and transmits packetized information to the other nodes through port B, after returning to the open mode, referring to col. 6, lines 62-65. According to the Examiner, this teaching in Higgins can be interpreted as operating the new node as a pass through for traffic before the new node configures its connections. *See* Paper No. 6 at page 4, 2nd paragraph.

However, the Examiner admits that Higgins fails to disclose passing virtual paths through the new node, or communicating these virtual paths to other nodes on the network. The Examiner also admits that Higgins fails to disclose providing connection information to the new node for all of the virtual paths and virtual circuits on the ring. *See* Paper No. 6 at page 4, 2nd paragraph.

The Examiner asserts that Chan discloses a method of protecting virtual paths on a ring network using an Intra-Ring Communications (IRC) protocol, which includes the functions of adding a node to the ring, and deleting a node from the ring, referring to col. 5, line 66 – col. 6, line 12. The Examiner further asserts that Chan discloses updating the look-up tables (LUTs) of each node when a new node is added, to reflect the new sequential numbering of the nodes in the ring, referring to col. 8, line 67 – col. 9, line 6. According to the Examiner, Chan teaches that LUTs in each node are updated so that previously configured virtual paths are eliminated if destined for a deleted node (the Examiner refers to col. 9, lines 16-19. The Examiner also asserts that Chan discloses a Virtual Path Identifier (VPI) table and a Virtual Circuit Identifier (VCI) table, which are used for making routing decisions at each node, referring to Fig. 4. *See* Paper No. 6 at pages 4, 2nd paragraph, through page 5.

The Examiner asserts that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Higgins to use the VPI table, VCI table, and LUTs of Chan to provide the new node with information for all of the virtual paths and virtual circuits on the ring, and to tear down connections for failed nodes. The Examiner also asserts that it

would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Higgins to communicate the virtual path of the new node to the other nodes in the network by updating their respective table. The Examiner contends that one of ordinary skill in the art would have been motivated to make these modifications to Chan "in order to properly route traffic around the ring in accordance with the updated topology, i.e., addition of a new node or removal of a failed node." *See* Paper No. 6 at page 4, 2nd paragraph, through page 5.

With respect to claims 4 and 17, the Examiner admits that Higgins and Chan fail to disclose an error checking code. The Examiner relies on Ballintine to disclose a SONET ring utilizing an Incoming Error Code (IEC) in the Path Overhead (POH), referring to col. 9, lines 1-8. The Examiner further states that Ballintine discloses Incoming Error Counts (IEC-1 through IEC-4) for keeping track of parity error counts in order to identify incoming failures to a virtual ring path segment, referring to col. 9, lines 17-38. The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Ballintine's error checking feature in the system resulting from the combination of Higgins and Chan, "to be sure that the paths through the newly inserted node was operating correctly once traffic started to be routed through the new node." *See* Paper No. 6 at page 7, 3rd paragraph.

2. The Teachings of Higgins

Higgins discloses a method for adding a new node 6d to an inter-nodal network 12, which is configured as a ring including nodes 6a, 6b, and 6c. *See, e.g.,* Figs. 1B, 1C, and 2. Before the new node 6c is inserted, each of the nodes 6a, 6b, and 6c operate in open mode, whereby the node receives packetized information (traffic) at port A and transmits the packets through port B, as illustrated by the solid lines in Fig. 2. *See, e.g.,* col. 6, lines 59-65. According to Higgins, the neighbor nodes 6a and 6c are adjacent to the position at which new node 6d will be inserted, as illustrated in Figs. 1B and 1C. Also, Higgins discloses that node 6b, for example, may be configured as the master node. *See, e.g.,* col. 7, lines 50-55.

In Higgins, as the insertion process commences, the neighbor nodes 6a and 6c are controlled so that they operate in a loopback mode. *See, e.g.,* col. 8, line 59 – col. 9, line 16. While in this loopback mode, the port A of each node 6a and 6c is effectively disconnected from the inter-nodal network 12, and the port B both receives and transmits traffic. *See, e.g.,* col. 7, lines 12-20 and Fig. 2. This causes traffic to be redirected away from the portion of the network 12 at which the new node 6d will be inserted (between neighbor nodes 6a and 6c). *See, e.g.,* col. 3, lines 59-63.

While the neighboring nodes 6a and 6c of Higgins remain in loopback mode, the new node 6d is physically connected to the inter-nodal network and subject to diagnostics. At this point, the new node 6d is typically connected to the host 4 via an Ethernet interface. *See* col. 8, line 58-60. The new node 6d

then enters a GET CONFIG state 96, in which it waits for configuration messages from a host 4 (which communicates with the inter-nodal network 12 via, e.g., a local area network). *See, e.g.*, col. 5, lines 59-66; col. 10, lines 8-37; and Fig. 8.

After receiving the configuration information, the new node 6d "will automatically transition to the WAIT FOR ADDITION state 112 in which **it will wait and do nothing** until a special message is received from the host 4" (col. 10, lines 37-42; emphasis added). Thus, Higgins expressly teaches that the new node 6d **does nothing** until it reaches the RUNNING STATE 116, as shown in Fig. 8.

While the new node 6d is in the WAIT FOR ADDITION state, the neighbor nodes 6a and 6c are transitioned back into open mode. *See, e.g.*, col. 10, line 43 - col. 11, line 34. Thereafter, the new node 6d must receive a final verification from the master node 6b before transitioning into the RUNNING state 116. This verification includes the new node 6d sending a message including its own ID to the master node 6b, and receiving an acknowledgement from the master node 6b. Once the new node 6d receives this verification and transitions into the RUNNING state, the new node is enabled to come into service (e.g., make connections, etc.) *See, e.g.*, col. 11, lines 30-34; and Fig. 8. With regard to this verification, Higgins discloses that:

> After the two neighbor nodes return to open mode, the host sends a message to the new node in response to which the new node attempts to verify that it is recognizable by the master node. The new node does this by sending a message to the master node...[and waiting] for an acknowledgement from the master node. When the acknowledgement is received, then a **final verification** is performed to ascertain that the new

> node or nodes as well as the neighbor nodes have open ports. **Thereafter**, the new node can be configured to **transmit and receive packets** to and from the inter-nodal network. (col. 4, lines 35-47; emphasis added)

Thus, between the time at which the neighbor nodes 6a and 6c return to open mode, and the time at which the new node 6d is enabled for service (RUNNING state), the new node 6d can only act as a source or destination for verification messages. Accordingly, the new node 6d does not process or control pass through traffic (i.e., traffic that is generated by another node, and destined for another node) until the new node 6d is fully enabled for operation in the ring network 12.

3. The Teachings of Chan

Chan discloses a method for protecting implementing Traffic Mode (ATM) traffic over a Synchronous Optical Network (SONET) Unidirectional Path Switched Ring (UPSR) 100. *See, e.g.*, col. 5, lines 26-45; col. 7, lines 42-53; and Fig. 1. Chan's USPR 100 includes such SONET nodes as Time Division Multiplexers (TDMs), Add Drop Multiplexers (ADMs), and Distributed Access Switches (DASs). According to Chan, when a new SONET node is inserted into the UPSR 100, it is assigned a sequential number based on its position in the ring 100. The new node may be assigned a sequential number that had previously belonged to another node, thus requiring the sequential numbering of the other nodes in the ring 100 to change. Chan teaches that the look-up tables (LUTs) of each SONET node in the ring are updated to reflect the new sequential numbering. *See* col. 8, line 56 – col. 9, line 6

According to Chan, the updating of the LUTs is performed in order to allow previously configured virtual paths (VPs) to bypass the newly added node. *See* col. 9, lines 16-18. Accordingly, Chan discloses that the inserted node operates as a bypass for ATM traffic after the virtual paths have been updated (i.e., the LUTs have been updated) based on the insertion of the node.

As such, Chan provides no teaching or suggestion that an inserted node operates as a pass through for traffic before a virtual path has been established for the inserted node.

4. Higgins/Chan Fails to Provide a Teaching or Suggestion of Each Claimed Element

Appellant respectfully submits that the resultant combination of Higgins and Chan fails to disclose every claimed feature in independent claims 1, 14, and 24. In order to establish *prima facie* obviousness, all claim limitations must be taught or suggested in the prior art. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Appellants respectfully submit that the combination of Higgins and Chan fails to teach or suggest "operating a given node [which is inserted into the ring] as a pass through for ATM traffic on other existing virtual path connections on the ring before a virtual path is established for the given node," as required by independent claims 1 and 14. Similarly, independent claim 24 requires that a newly-inserted node be instructed, "to operate as a pass through...until one or more new virtual paths are established for the newly-inserted node."

In the Amendment filed by Appellant on October 14, 2003, Appellant argued that Chan fails to teach or suggest that an inserted node operates as a pass through for traffic before a virtual path is established for the inserted node (*see* page 12, last paragraph). The Examiner agreed, but indicated that this argument was moot because Chan was only relied upon to provide a teaching of setting up virtual paths. *See* Paper No. 6 at page 2, 2nd paragraph. The Examiner argued that Higgins is relied upon to provide a teaching of operating the new node 6d as a pass through for traffic. See *Id.*

Specifically, the Examiner refers to Higgins at col. 4, lines 35-47 (quoted above) as teaching that the new node 6d is configured to receive and transmit traffic after the neighbor nodes 6a and 6c are returned to open mode. The Examiner refers to a different section of Higgins (col. 4, lines 44-47) as teaching that the neighbor nodes receives and transmits packetized information while in open mode. The Examiner concludes that because the neighbor nodes 6a and 6c are in open mode before the new node 6d is configured to service, the new node 6d must be acting as a pass through before its connections are set up. *See* Paper No. 6 at page 2, 2nd paragraph.

Appellant respectfully disagrees. In the portion of Higgins cited by the Examiner (col. 4, lines 35-47; quoted above), Higgins expressly discloses that the new node 6d is configured to transmit and receive packets only after receiving an acknowledgement and final verification from the master node. This final verification is the same verification discussed in col. 11, lines 30-45, which is performed by the master node 6b and new node 6d to cause the new

node 6d to transition into RUNNING STATE (i.e., fully enabled for service). Since the new node 6d must be able to receive and transmit packets in order to operate as a pass through (*see, e.g.*, specification at page 6, lines 6-14), it is clear that Higgins fails to disclose operating the new node 6d as a pass through until **after** it is fully configured for service.

Appellant submitted such arguments to the Examiner in the Reply After Final filed on May 11, 2004 (*see* page 13, 1st paragraph – page 14, first paragraph). In the Advisory Action issued on June 14, 2004 (Paper No. 8), the Examiner responds by arguing that the final verification verifies that the new node 6d and neighbor nodes 6a and 6c have open ports. The Examiner asserts that the open ports on the new node 6d "provide a path through which traffic may pass." *See* Paper No. 8 at page 2. This statement contradicts Higgins' teaching that the new node does not receive and transmit packets until after verification (*see, e.g.*, Higgins at col. 4, lines 45).

The Examiner also argues in the Advisory Action that the new node 6d operates as a pass through by exchanging configuration and verification information with the master node 6b. *See* Paper No. 8 at page 2. Appellant respectfully disagrees. The new node 6d does not operate as a pass through for traffic by being the source or destination of configuration/verification messages. Instead, a node operates as a pass through by processing or controlling traffic that is "passing through" the node (i.e., traffic that is generated by another node, and destined for another node). *See, e.g.*, specification at page 6, lines 6-14.

Hence, it is respectfully submitted that both Higgins and Chan fail to teach or suggest all the express limitations of independent claims 1, 14, and 24, which is required to establish a *prima facie* case of obviousness. *Royka* at 180 U.S.P.Q. 580. It is further respectfully submitted that claims 2-4, 6-11, 15-17, 19, 22-26, and 29 incorporate all the express limitations of claims 1, 14, and 24, by virtue of their respective dependencies on claims 1, 14, and 24. Thus, Appellant submits that the rejection of claims 1-4, 6-11, 14-17, 19, 20, 22-26, and 29 under 35 U.S.C. § 103(a) is improper and must be reversed.

B. The Rejection of Claims 5 and 18 under 35 U.S.C. § 103(a).

1. Elements of Claims 5 and 18.

Claim 5 recites that assigning the virtual path to the given node includes that "the given node request[s] the assignment from the node, and the hub node respond[s] to the request with the assignment." Similarly, claim 18 recites, "requesting, at the given node, the assignment from a hub node, and responding to the request, at the hub node, with the assignment."

2. Summary of the Examiner's Rejection.

The Examiner rejected claims 5 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Higgins in view of Chan, and further in view of Nakata.

As acknowledged by the Examiner, Higgins and Chan fail to disclose that a given node requests virtual path assignment from a hub node, and that the hub node responds to the request with the assignment. *See* Paper no. 6 at

page 7, 5th paragraph, through page 8. However, the Examiner asserts that Nakata discloses a ring with a plurality of nodes, including a control node, in Fig. 2. According to the Examiner, Nakata teaches that a node may generate a request to a control node, causing the control node to make an assignment and inform the requesting node (the Examiner refers to col. 1, line 58 – col. 2, line 36). *See* Paper no. 6 at page 8, 1st paragraph.

The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Higgins and Chan to include a node, which makes a request to a control node or ring hub node and receives an assignment therefrom, as taught by Nakata. According to the Examiner, this would have been obvious "because the master node, or ring hub node, would have information about all of the virtual paths and virtual circuits on the ring and thus be able to make a determination of which assignments may be made to the new node." *See* Paper no. 6 at page 8, 1st paragraph.

3. The Examiner Provides No Teaching or Motivation to Combine Nakata with Higgins/Chan.

The Federal Circuit has made it very clear that "the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat

the patentability – the essence of hindsight." *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999).

The required evidence of a teaching, suggestion, or motivation to make the cited combination of references can be found either in the prior art references themselves (the most typical location), the knowledge of one of ordinary skill in the art, or in some cases, from the nature of the problem to be solved. *Id.* The range of potential sources, however, does nothing to diminish the requirement for actual evidence. "The showing must be clear and particular" and cannot be met by broad conclusory statements. *Id.*

Furthermore, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" M.P.E.P. at § 2143.01, citing *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990).

Appellant respectfully submits that the Examiner fails to provide any evidence of a teaching, motivation, or suggestion that would cause one of ordinary skill in the art to combine Nakata with Higgins and Chan. Instead, the Examiner states that it would have been obvious to include a node in Higgins/Chan that requests assignments from a master node, and receives assignments therefrom, merely because Nakata's master node "would...be able to make a determination of which assignments may be made to the new node." *See* Paper No. 6 at page 8, 1st paragraph. Thus, the Examiner merely relies on Nakata's teaching that a master node **could** provide virtual path assignment information to a requesting node as being sufficient to modify Higgins/Chan to

include nodes that request and receive virtual path assignments from a master (or ring hub) node. The Examiner provides no suggestion of the desirability to make such a modification.

Since the Examiner has not provided any such evidence showing a teaching or motivation to combine, but instead has merely used Applicants' disclosure as a blueprint, Appellant respectfully submit that the combination of Higgins, Chan, and Nakata is improper. Thus, the rejection of claims 5 and 18 under 35 U.S.C. § 103(a) is improper and must be reversed.

4. Nakata Fails to Remedy Deficiencies of Higgins/Chan with Respect to Claims 1 and 14.

For the reasons set forth above, Appellant submits that Higgins/Chan fails to teach or suggest operating an inserted node as a pass through for traffic on existing virtual path connections on the ring before a virtual path is established for the inserted node, as required by independent claims 1 and 14. It is further submitted that Nakata fails to teach or suggest these features, and that the Examiner does not assert that Nakata teaches or suggests these features.

Claims 5 and 18 incorporate the above limitations by virtue of their dependency on claims 1 and 14, respectively. Hence, it is respectfully submitted that the rejection of claims 5 and 18 under 35 U.S.C. § 103(a) is improper and must be reversed for these additional reasons.

C. The Rejection of Claims 12 Under 35 U.S.C. § 103(a).

1. Summary of the Examiner's Rejection.

The Examiner rejected claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Chan.

The Examiner asserts that Chan discloses an IRC protocol that includes the functions of deleting a node from the ring, and communicating ring failure status to the other nodes in the ring, referring to col. 8, lines 49-55. The Examiner further asserts that Chan discloses LUTs in each node, which are updated to eliminate previously configured virtual paths if they are destined for a deleted node, referring to col. 9, lines 16-19. The Examiner also asserts that Chan discloses VCI tables for maintaining virtual circuit information at each node, referring to Fig. 4. The Examiner admits that Chan fails to expressly disclose tearing down virtual circuit connections. *See* Paper No. 6 at page 8, last paragraph, through page 9.

However, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chan to tear down or eliminate virtual circuit connections that are directed to a failed node, "because virtual connections destined to a deleted node would no longer have a path through which to travel." *Id.*

2. The Teachings of Chan

Chan discloses that a SONET node may detect failures on the UPSR 100 by a loss of communication with its neighbor node. *See, e.g.*, col. 12, lines 56-

61; and col. 13, line 64 – col. 14, line 9. In particular, Chan teaches that each SONET node transmits notification signals, preferably every 5 ms, in both the clockwise (CW) and counter clockwise (CCW) directions on the UPSR 100 to verify integrity of the ring. According to Chan, when a particular node does not receive a notification signal from one of its neighboring node within 15 ms, the node identifies that a failure has occurred. Upon identifying this failure, Chan discloses that the node notifies the other nodes of the failure. *See, e.g.*, col. 13, line 64 – col. 14, line 9.

Chan discloses that two types of failures may occur: 1) SONET failures, i.e., path failures; and 2) ATM failures, i.e., node failures. *See, e.g.*, col. 12, lines 543-54. However, Chan provides no disclosure that a node, which detects a failure, is able to distinguish between these failures.

In particular, Chan discloses instances where SONET failures occur (*see* col. 12, line 55 – col. 14, line 9), and where ATM failures occur (*see* col. 14, line 10 – col. 15, line 33). Chan discloses that both types of errors may be detected the same way, i.e., by a failure to communicate with its neighboring node. *See* col. 12, lines 56-64 (describing SONET failures that are detected by loss of signal between neighboring nodes); and col. 14, line 15 – col. 15, line 33 (describing ATM failures that are detected by loss of communication between neighboring nodes). Accordingly, when Chan's node detects a failure, it cannot distinguish between link failures and node failures since both types of failures may be detected in response to a loss of communication with another node.

Chan discloses that after detecting either type of failure, a node responds by sending a failure notification, which is passed on to the other nodes. *See, e.g.*, col. 9, line 52 – col. 10, line 9. Since the node cannot determine whether the failure is a path or node failure, the notification only identifies the node detecting the failure, and the direction (CW or CCW) of the failure. This information is used for protection switching in the other nodes. *See, e.g.*, col. 10, lines 2-7.

Also, Chan **teaches away** from performing protection switching by updating the LUTs of the nodes based on the affected virtual paths (VPs), because such a process would be too complex in may SONET rings. *See* col. 10, lines 15-27. Instead, Chan discloses that protection switching is performed, at each node receiving ATM cells, by examining the header of the cells to determine the destination node of the cells. A protection switch block 340 within the node stores a destination protection table 425, which identifies for each possible destination, the failure status of the CW and CCW paths. If the node determines that a failure will block the cells from reaching their destination via the current direction, the node will redirect the cells in the opposite direction (if the opposite direction is not blocked) or drop the cells (if both directions to the destination are blocked). *See, e.g.*, col. 10, line 40 – col. 12, line 12. Accordingly, Chan avoids a protection switching scheme that updates ring topology information in a node to indicate that another failed node has been removed from the ring.

3. Chan Fails to Provide a Teaching or Suggestion of Each Claimed Element

Appellant respectfully submits that the resultant combination fails to disclose every claimed feature in independent claim 12. Thus, it is respectfully submitted that the Examiner has filed to establish *prima facie* obviousness with respect to claim 12. *Royka* at 180 U.S.P.Q. 580.

Independent claim 12 recites "determining, at a ring hub node, that a node has failed," and "providing instructions to other nodes on the ring to update ring topology information[...to indicate] that the failed node is removed from the ring." It is respectfully submitted that these features are neither taught nor suggested by Chan.

In the Amendment filed October 14, 2003, Appellant argued that Chan does not disclose the removal of a failed node. Appellant also argued that Chan does not teach distinguishing between link failures and node failures within a ring network. *See* Amendment of October 14, 2003 at page 13.

In response to this argument, the Examiner referred to col. 6, lines 5-10 of Chan, which states:

> T]he IRC protocol includes the following functions...adding/deleting a node to/from the ring; notifying other nodes on the ring when either a SONET or an ATM failure has been detected; and notifying other line cards in the node when failure occurs.

The Examiner argued that "[i]t is clear that the protocol Chan discloses includes functions for deleting a node and detecting link failure." *See* Paper No. 6 at page 3, 2nd paragraph.

Appellant agrees that Chan teaches the separate functions of deleting a node and detecting failures. However, Chan does not disclose, nor does the Examiner assert that Chan discloses, making a specific determination that the detected failure occurred in a node. Accordingly, Chan fails to provide a teaching of removing a node, which has been determined to fail, as required by independent claim 12. There is no teaching in Chan that path failures (SONET failures) are remedied any differently than node failures (ATM failures). Further more, Chan provides no teaching that either type of failure is remedied by deleting a node.

In the Amendment of October 14, 2003, Appellant further argued that Chan fails to disclose updating network topology information based on a detected fault, as required by claim 12 (*see* page 13). The Examiner responded to this argument by referring to Chan's teaching in col. 9, lines 16-19, that "[t]he updating of LUTs is accomplished so that the previously configured VPs are...eliminated if destined for a deleted SONET node." *See* Paper No. 6, at page 3, 2nd paragraph.

Here, it is apparent that the Examiner infers some connection between Chan's deletion of a node and a detection of a failure. However, Appellant respectfully submits there is no teaching or suggestion in Chan from which such an inference can be made. Since Chan provides no teaching or suggestion of specifically detecting a node failure (as opposed to detecting a path failure), there can be no teaching or suggestion in Chan of removing a node based on such a detected failure.

Accordingly, Appellant respectfully submits that Chan fails to teach or suggest all the express limitations of independent claim 12. Thus, Appellant submits that the rejection of claim 12 under 35 U.S.C. § 103(a) is improper and must be reversed.

D. The Rejection of Claims 13 and 21 Under 35 U.S.C. § 103(a).

1. Summary of the Examiner's Rejection.

The Examiner rejected claims 13 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Chan in view of Higgins.

The Examiner admits that Chan fails to disclose a hub node that determines the node failure and controls the tearing down of virtual circuits and virtual paths. The Examiner asserts that Higgins teaches a ring system with a host 4 that may be implemented within a node, referring to col. 6, lines 24-30. The Examiner further asserts that Higgins discloses that the host 4 controls the overall operation of the ring system 2 and communicates with the nodes to direct call processing functions, such as making connections, referring to col. 6, lines 14-23. *See* Paper No. 6 at page 9, 3rd paragraph.

The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chan to include a host, which determines a node failure and performs the tearing down of virtual circuits and virtual path connections, "because the host would have all of the necessary information to perform the tearing down of connections without having to retrieve this information from other nodes." *Id.*

2. The Examiner Provides No Teaching or Motivation to Make the Proposed Combination of Chan and Higgins.

The Examiner's combination of Chan and Higgins is based on hindsight, using Applicants' disclosure as a blueprint, which is not permitted. *Interconnect Planning Corp.* at 227 U.S.P.Q. 543. In particular, the Examiner has provided no evidence of a teaching, suggestion, or motivation to modify Chan, let alone a showing that is "clear and particular" as it must be. *See, e.g., Dembiczak* at 50 U.S.P.Q.2d 1617.

The Examiner merely states that it would have been obvious to include Higgins' host in Chan's system because the host would be able to tear down connections without having to retrieve information from the other nodes. *See* Paper 6 at page 9, 3rd paragraph. Thus, the Examiner asserts that Chan can be modified to include a host, without providing any suggestion of the desirability to modify Chan as such. This is not sufficient to establish a *prima facie* case of obviousness. *See, e.g., Mills* at 16 U.S.P.Q.2d 1430.

Thus, it is respectfully submitted that the rejection of claims 13 and 21 under 35 U.S.C. § 103(a) is improper and must be reversed.

3. The Examiner Misinterprets the Teachings of Higgins.

Furthermore, Higgins does not teach that the host 4 is "implemented within a node," as asserted by the Examiner (*see* Paper No. 6 at page 9, 3rd paragraph). Instead, Higgins discloses that the host 4 is an entity that is

connected in communication with the nodes of the inter-nodal network 12 through a local area network (LAN), such as Ethernet. *See, e.g.*, Higgins at col. 5, lines 59-66. As such, the host 4 must use the LAN to send messages to, and receives messages from, any of the nodes. *See, e.g., Id.* Accordingly, the proposed modification of Chan to include a host, as taught by Higgins, fails to teach the use of a ring hub node to determine that a node has failed, as required by claim 13. Furthermore, this proposed combination of Chan and Higgins does not disclose determining that node has failed based on its failure to communicate with the ring hub node, as recited in claim 21. Thus, Appellant submits that the rejection of claims 13 and 21 is improper and must be reversed, for this additional reason.

4. Higgins Fails to Remedy Deficiencies of Chan with Respect to Claim 12.

For the reasons set forth above, Appellant respectfully submits that Chan fails to disclose detecting node failures and updating topology information to indicate that the failed node is removed, as required by claim 12. Furthermore, claims 13 and 21 incorporate the limitations of independent claim 12 by virtue of their dependency on claim 12. It is respectfully submitted Higgins does not teach or suggest, and the Examiner does not assert that Higgins teaches or suggests, the above-identified limitations of claim 12. Since Higgins does not remedy the deficiencies of Chan with respect to claim 12, it is respectfully submitted that the rejection of claims 13 and 21 under 35 U.S.C. § 103(a) is improper and must be reversed for this additional reason.

E. The Rejection of Claims 27 and 28 Under 35 U.S.C. § 103(a).

1. Elements of Claims 27 and 28.

Claim 27 is dependent upon independent claim 24, and therefore incorporates the express limitations of claim 24. Claim 27 further recites a ring node configured to "detect a failure of one of the ring nodes; and tear down, in response to the detected failures, connections on the ring network directed to or initiating from the failed ring node." Furthermore, claim 28 incorporates these limitations by virtue of its dependency on claim 27.

2. Lack of Specificity in Examiner's Rejection.

In the section of the Examiner's rejection relating to claim 27 (Paper No. 6, last paragraph, through page 7), the Examiner fails to point out the specific teachings in Chan and Higgins of detecting a failure of a node, or tearing down connections on the ring network of the **failed** node in response thereto. Thus, it is assumed by Appellant that relies upon the same portions of Chan used for rejecting independent claim 12, which recites similar features to those above.

3. Arguments Presented for Claim 12 Similarly Apply to Claims 27 and 28.

Appellant respectfully submits that the argument presented above for claim 12 regarding Chan's failure to teach or suggest detecting a node failure,

and removing the failed node based on the detected failure, also apply to claim 27. These arguments are hereby incorporated by reference.

Since Chan does not remove a node in response to a detected failure of the node, there can be no teaching or suggestion in Chan to tear down, in response to the detected failure, connections on the ring to or from the failed node, as recited in claim 27. Thus, the Examiner has failed to provide a teaching or suggestion of each express limitation in claims 27 and 28.

Accordingly, Appellant respectfully submits that the rejection of claims 27 and 28 under 35 U.S.C. § 103(a) is improper and must be reversed.

(9) CONCLUSION

For the reasons advanced above, it is respectfully submitted that all the claims in this application are allowable. Thus, favorable reconsideration and reversal of the Examiner's Final Rejection of claims 1-29 by the Honorable Board of Patent Appeals and Interferences, is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Very truly yours,

BIRCH, STEWART, KOLASCH & BIRCH

By____________________________
Michael R. Cammarata
Reg. No. 39,491

MRC/JWR

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

(APPENDIX OF CLAIMS)

Claim 1. A method for inserting a given node into ring operations of an ATM ring, including:

operating the given node as a bypass for ATM traffic on the ring;

operating the given node as a pass through for the ATM traffic on other existing virtual path connections on the ring before a virtual path is established for the given node;

assigning to the given node one or more virtual paths to direct traffic to and from the given node over the ring;

communicating the virtual path assignment to other nodes on the ring to establish the assigned virtual path on the ring; and

providing to the given node connection information for virtual paths and virtual circuits on the ring.

Claim 2. The method of claim 1 wherein the step of providing connection information to the given node includes providing routing tables to the given node.

Claim 3. The method of claim 2 wherein the step of providing connection information further includes providing the information from a hub node to the given node.

Claim 4. The method of claim 3 wherein the step of providing connection information further includes:

providing an error checking code with the information, and

at the given node checking the information with the error checking code to determine that the information is correct.

Claim 5. The method of claim 1 wherein the step of assigning the virtual path to the given node further include

the given node requesting the assignment from a hub node, and

the hub node responding to the request with the assignment.

Claim 6. The method of claim 1 wherein the step of communicating the virtual path assignment to other nodes includes updating routing tables maintained by the other nodes.

Claim 7. The method of claim 1 wherein the step of communicating the virtual path assignment to other nodes includes providing to the other nodes call set up information for calls over the newly assigned virtual path.

Claim 8. The method of claim 1 further including the steps of

establishing connections to and from the given node over the assigned virtual path; and

tearing down connections over the assigned virtual path.

Claim 9. The method of claim 8 wherein the step of communicating the virtual path assignment to other nodes includes updating routing tables maintained by the other nodes.

Claim 10. The method of claim 9 further including updating the routing tables with call set up and tear down information associated with the one or more virtual paths assigned to the given node.

Claim 11. The method of claim 1 further including the step of, at the given node, shaping traffic over the virtual circuits associated with the established connections on the ring.

Claim 12. A method for removing a failed node from an ATM ring, the method including:

determining that a node has failed;

tearing down virtual circuit connections directed to or initiating from the failed node;

tearing down virtual paths assigned to the failed node; and

providing instructions to other nodes on the ring to update ring topology information at the other nodes, the updated ring topology information indicating that the failed node is removed from the ring.

Claim 13. The method of claim 12 wherein

the step of determining that a node has failed includes having a ring hub node determine the failure, and

the steps of tearing down the virtual circuit and virtual path connections are controlled by a hub node.

Claim 14. A method for inserting a given node into ring operations of an ATM ring and removing a failed node from the ring operations, the method including:

operating the given node as a bypass for ATM traffic on the ring;

operating the given node as a pass through for the ATM traffic on existing connections on the ring before a virtual path is established for the given node;

assigning to the given node one or more virtual paths to direct traffic to and from the given node over the ring;

communicating the virtual path assignment to other nodes on the ring to establish the assigned virtual path on the ring; and

providing to the given node connection information for virtual paths and virtual circuits on the ring;

tearing down connections directed to and initiating from a failed node; and

instructing non-failing nodes on the ring to update ring topology information.

Claim 15. The method of claim 14 wherein the step of providing connection information to the given nodes includes providing routing tables to the given node.

Claim 16. The method of claim 15 wherein the step of providing connection information further includes providing the information from a hub node to the given node.

Claim 17. The method of claim 15 wherein the step of providing connection information further includes

providing a error checking node with the information, and

at the given node checking the information with the error checking code to determine that the information is correct.

Claim 18. The method of claim 14 wherein the step of assigning the virtual path to the give node further includes

requesting, at the given node, the assignment from a hub node, and

responding to the request, at the hub node, with the assignment.

Claim 19. The method of claim 14 wherein the step of communicating the virtual path assignment to other nodes includes updating routing tables maintained by the other nodes.

Claim 20. The method of claim 1, further including:

establishing a connection for the given node with an intra-ring management channel; and

exchanging pass through information between the given node and a hub node on the ring via the intra-ring management channel, the pass through information being used to operate the given node as a pass through.

Claim 21. The method of claim 12, wherein the determining step determines that a node has failed based on a failure by the failed node to communicate with a ring hub node.

Claim 22. The method of claim 14, further including:

detecting a failure with respect to the failed node in response to the failed node failing to communicate with a hub node.

Claim 23. The method of claim 14, wherein said connections includes at least one of virtual paths and virtual circuit connections initiating from or destined to the failed node.

Claim 24. A ring network for conducting asynchronous transfer mode (ATM) communications, comprising:

a plurality of ring nodes operably connected via a plurality of virtual paths, each virtual path being used to direct traffic from an initiating ring node to a destination ring node; and

a ring hub node configured to instruct a newly-inserted ring node to operate as a pass through from ATM traffic via the virtual paths until one or more new virtual paths are established for the newly-inserted ring node.

Claim 25. The ring network of claim 24, wherein the ring hub node is further configured to assign the new virtual paths to direct traffic to and from the newly-inserted ring node.

Claim 26. The ring network of claim 24, wherein the ring hub node is further configured to provide connection information to the ring nodes, the connection information corresponding to virtual paths and virtual circuits on the ring network.

Claim 27. The ring network of claim 24, wherein the ring hub node is further configured to

detect a failure of one of the ring nodes; and

tear down, in response to the detected failure, connections on the ring network directed to or initiating from the failed ring node.

Claim 28. The ring network of claim 27, wherein the ring hub node is configured to detect the failure in response to the failed ring node failing to communicate with the ring hub node.

Claim 29. The ring network of claim 24, wherein the ring hub node is further configured to provide instructions to the non-failing ring nodes to update ring topology information at the non-failing ring nodes, the updated topology information indicating that the failed ring node is removed from the ring network.